

ABSTRACT

There is provided a lead-free solder having the same workability, use conditions, and bonding-reliability as those of a conventional Sn-37 wt.% Pb eutectic solder. The solder is comprised of zinc at 7 to 10 weight % both inclusive, bismuth at 0.001 to 6 weight % both inclusive, silver at 0.001 to 0.1 weight % both inclusive, and the remainder of tin, and has a solidus temperature equal to or higher than a melting point of the Sn-37 wt.% Pb eutectic solder, and a liquidus temperature higher than a melting point of the Sn-37 wt.% Pb eutectic solder by about 10 to 20 degrees centigrade. Hence, an electronic component can be mounted on a substrate in a reflow-furnace used for the conventional Sn-37 wt.% Pb eutectic solder. The contained silver increases a tensile strength of the solder to thereby prevent generation of unfavorable intermetallic compounds. Consequently, it is possible to present a circuit substrate unit having high bonding-reliability and providing a higher mechanical strength than the conventional Sn-37 wt.% Pb eutectic solder, without a need of newly introducing a reflow-furnace which can uniformly heat a substrate over an entire surface thereof.